Performance Practice Review

Volume 5
Number 1 *Spring*

Article 8

Music for the Cimbalo Cromatico and the Split-Keyed Instruments in Seventeenth-Century Italy

Christopher Stembridge

Music for the *Cimbalo Cromatico* and Other Split-Keyed Instruments in Seventeenth-Century Italy*

Christopher Stembridge

The Concept of the *Cimbalo Cromatico*

Although no example of such an instrument is known to have survived intact, the *cimbalo cromatico* was a clearly defined type of harpsichord that apparently enjoyed a certain vogue in Italy during the late sixteenth and early seventeenth centuries.[1] The earliest use of the term is found in the titles of two toccatas *per il cimbalo cromatico* included by Ascanio Mayone in his *Secondo Libro di Diversi Capricci per Sonare* published in Naples in 1609.[2] Subsequently the term was used in publications by

*This is the first of three related articles. The second and third, to be published in subsequent issues of *Performance Practice Review*, will deal with the instruments themselves.

[1]Two extant harpsichords made in the first half of the seventeenth century but subsequently altered seem to have been originally *cimbali cromatici*. They are mentioned by John Henry van der Meer in "Partiell und vollständig enharmonische Saitenklaviere zwischen 1548 und 1711," *Das Musikinstrument* (July 1987) 12-20; cf. 16-17. They will be disccused in the two subsequent articles, as mentioned above.

[2]Modern editions ed. Santiago Kastner (Paris, 1964) and Christopher Stembridge (Padua, 1984).

Trabaci (1615), Colonna (1618), and del Buono (1641).[3] The references to it in Fabio Colonna's treatise make it absolutely clear that the *cimbalo cromatico* had a keyboard with nineteen divisions to the octave.

It is, of course, necessary to realize that normal keyboards of the period were nearly always tuned in a mean-tone temperament so that the chromatic notes were tuned a perfect, or — depending on the particular type of mean-tone used — nearly perfect, major third above (in the case of sharps) or below (in the case of flats) the relevant diatonic note. This naturally excluded the possibility of the same key playing the dual role, as it does in equal temperament, of a sharp and a flat.[4] A choice had to be made; usually the keyboard had three sharps (f#, c# and g#) and two flats ($b^{\flat}$ and $e^{\flat}$). The number of triads that could be played was thus rather restricted, at least by later standards. This did not usually pose any problem in the case of solo music written for keyboard. Difficulties arose when accompanying other instruments fixed at different pitches — common enough at the period — or singers who were, of course, not restricted to any particular pitch.[5] In such cases the keyboard-player sometimes had to transpose and play in a "key" not normally available on the keyboard. This meant that certain chromatic notes other than f#, c#, g#, $b^{\flat}$, and $e^{\flat}$, were required. Since any compromise in the tuning was felt to be undesirable, the only solution was to retune certain notes (for instance $a^{\flat}$ in the place of g#) — unless extra keys were provided for playing the additional notes tuned to the different pitch. As will be seen in the discussion of Cima's transposition instructions below, such practice was not uncommon.[6] From the fifteenth century onwards, an increasing number of Italian organs were furnished with extra keys, usually for d# and/or $a^{\flat}$. Gradually, though less commonly, harpsichords seem to have followed suit.[7] This development (to be discussed in the subsequent articles) led to the *cimbalo cromatico* and the *archicembalo cromatico* and other instruments with split keys.

---

[3]Giovanni Maria Trabaci, *Secondo Libro de Ricercate, & altri varij Capricci* (Naples, 1615); Fabio Colonna, *La Sambuca Lincea* (Naples, 1618); Gioanpietro del Buono, *Sonata Stravagante* (Palermo, 1641).

[4]For further discussion of mean-tone temperaments, cf. Mark Lindley, "Temperaments," parts 2 and 5, in *New Grove Dictionary of Music and Musicians* (London: Macmillan, 1980), vol. 18, and Vincent J. Panetta, Jr., *Treatise on Harpsichord Tuning by Jean Denis* (Cambridge, 1987), especially 17-19, 22.

[5]Cf. Mark Lindley et al., "Pitch," parts 1-4, in *New Grove*, vol. 14.

[6]See pp. 4ff.

[7]Cf. Panetta, *Treatise*, 36-43.

Evidence in Colonna's *Sambuca Lincea*

Fabio Colonna's *La Sambuca Lincea* describes a projected enharmonic clavichord with thirty-one keys to the octave — i.e. with essentially the same divisions as Vicentino's *archicembalo*.[8] On page 3, he explains what extra keys his clavichord will have. He first lists a# and d#, pointing out that these are not to be found on harpsichords except those with extra chromatic keys — such instruments existed but the keys were seldom used, according to Colonna, as few musicians understood the system![9] In the following paragraph he goes on to list, in addition, e#, b#, d^{b}, a^{b}, and g^{b}, which, he says, are missing on ordinary harpsichords but may be found in the "third order" of chromatic keys (i.e. the back row of black keys, placed behind the normal chromatic keys, found only on the *cimbalo cromatico*).[10] He then proceeds to list notes which, he states, are not found on the *cimbalo cromatico*; these are b^{bb}, c^{b}, f^{b}, f##, and d###.[11] Some of this information is repeated by Colonna on pages 56 and 62.

---

[8]F. Colonna, *La Sambuca Lincea*. The *archicembalo* is described in Nicola Vicentino, *L'Antica Musica* . . . (Rome, 1555).

[9]". . . le Terze maggiori sopra Ffaut semitonato, che li fanno i Semituoni di Alamirè, che non sono nel Cembalo . . . le terze maggiori sopra Bfabemì per Bequadro, che li fanno i Semituoni di Dsolrè, che ne meno sono nel Cembalo, & sono consonanze assai belle, & necessarie con le sopradette, che ne meno si ritrovano nell'Arpa, se non siano di tre ordine, & nelli Cembali, se non siano con i tasti Chromatici; che da molti curiosi Musici son stati fatti, ma poco usati per non esser cognito veramente in che consista quel geno." Colonna, p. 3. It is unclear whether Colonna is differentiating between "Cembali . . . con i tasti Chromatici" here and "Cembali Chromatici" in the following paragraph. If by the former he means harpsichords that have two or three "tasti Chromatici," it is strange that he lists a# here and not a^{b} since instruments with two extra keys invariably had d# and a^{b}. There is pehaps little logic in the order in which Colonna lists the chromatic notes since he names a# before d# and, in the ensuing paragraph, d*b* before a^{b}!

[10]". . . vi sono tutti li tasti Chromatici, che sono li Semituoni minori sopra Elami, & Bfabmì, tasti de i Bemolli, non già delle note Elamì, & Bfabmì; ma delle loro antecedenti Dsolrè, & Alamirè, che mancano à i Cembali ordinarij, che gli altri tasti sopra Csolreut, & Alamirè, & Dsolrè, sono i loro Bemolli collocati sopra li Semituoni di Csolfaut, Ffaut, & di Gsolreut, Semitonati nel terzo ordine de' tasti Chromatici." The half-keys e# and b# were placed between e & f and b & c, respectively.

[11]"Vi sono di più ancora, (che mancano alli Cembali Chromatici,) le Terze minori di Gsolreut con il Bemolle, come dell'Alamirè, & ancora del Dsolrè, ... come anco si vedranno le Terze maggiori sopra i Semituoni minori di Dsolrè, come di Elamì, & Bfabmì; tutti gradi Enarmonici superiori à Bemolli . . . ," 3-4.

The *cimbalo cromatico* keyboard thus corresponds exactly to that of the *Clavicymbalum Universale, seu perfectum* described by Praetorius in the same year.[12]

Cima's Transpositions

That these niceties do not represent some mere lunatic fringe becomes clear when we recognize what measures players of ordinary keyabords had to take in order to play acceptably in tune. A significant publication in this context is the appendix to G. P. Cima's *Partite de Ricercari & Canzoni alla Francese*, printed in Milan in 1606.[13] This gives a method for transposing up or down to any degree of the (twelve-note) chromatic scale.[14] In his introductory paragraph, Cima points out how essential it is for organists to be able to transpose for the convenience of singers ("per comodità de Cantori") and quotes Zarlino (*Le Istitutioni Harmoniche*, vol. 4, 17) as a revered authority to back up his argument. It seems that this was the first published attempt to make the art of transposition accessible to the amateur, as Cima himself points out. (One may perhaps assume that the best players of the period were well versed in both transposing and retuning their harpsichords to suit.) For each new transposition, one or more notes in each octave have to be retuned. The notation-system that Cima adopts looks quite extraordinary, but this is only because it is treated strictly as a form of tablature. Thus, for instance, d# appears as a printed e^{b} (which has of course been retuned to suit) — just as in German letter-tablature the same note was written or printed as d# even when playing its more common role of e^{b}. (Clearly Italian keyboard-players of the period were so accustomed to the mean-tone tempered keyboard that the normal chromatic keys could not reasonably be perceived to be anything other than c#, e^{b}, f#, g#, and b^{b}.) Hence the beginning of Cima's *Ricercar quinto tono*, c', e', g', when transposed up a tritone, reads: f#', b*b*', c#". This transposed version is prefaced with a directive to retune as follows:

f to be a major third above c#
c to be a major third above g#

[12]Michael Praetorius, *Syntagma Musicum II, De Organographia* (Wolfenbüttel, 1, 1618; 2, 1619) 63-66.

[13]Modern transcription ed. Clare G. Raynor, *Corpus of Early Keyboard Music*, vol. 20 (Stuttgart, 1969).

[14]Raynor translates *clavicordo* as "clavichord." Given that clavichords of the time were invariably fretted, thus making it impossible to retune individual notes, harpsichord is surely implied. The term *clavicordo* seems to have been used for any keyboard instrument.

bb to be a major third above f#
eb to be a major third above b.

It is perhaps of particular significance that Cima fails to give the necessary directions to retune g as a major third above the retuned e^{b} (i.e. d#) to give f## in his seventh and twelfth examples, or to retune d as c## in his seventh example. These are in fact his only omissions and it is surely no coincidence that they would be the sole cases involving double sharps. (There are no instances where a double flat would be required.) For the amateur, these notes would be no more difficult to tune than any of the others, nor would terminology cause a problem since Cima simply requests the player to tune a third above a given note. They are, however, unlike all the notes that Cima retunes, not found on a *cimbalo cromatico*.[15] It therefore looks as if Cima may have been so conversant with the *cimbalo cromatico* that its limits had imposed themselves on his way of thinking. (In fact, he could easily have side-stepped the problem had he chosen a^{b} rather than g# as the keynote for example 7, and d^{b} instead of c# for example 12, in which case no notes foreign to the *cimbalo cromatico* would have been required.)

Cima's reference to the accompaniment of singers at different pitches ('per comodità de Cantori') finds a parallel in Praetorius's comments regarding the use of the *Clavicymbalum Universale* when he points out that it could play at any pitch so that it would be hard to find any instrument which it could not accompany.[16] Praetorius's notation of the different chromatic notes is avowedly based on that used by Marenzio in his chromatic madrigals. This reminds us that it is useful to have the extra notes on a keyboard, not simply to avoid the drudgery of retuning, but because some avant-garde vocal music of the period required more than twelve different pitches in the octave.

It is therefore clear that the *cimbalo cromatico* was devised as an accompanying instrument. At the same time, it is reasonable to suppose

[15]That is assuming that the b# and e# keys on the *cimbalo cromatico* were sometimes retuned to give c^{b} and f^{b}, although Colonna's statement would not support this. See below (n. 66) for a possible case of *cb* in solo keyboard music.

[16]". . . fast kein ander Instrument kan vorkommen/ do man nicht mit diesem einstimmen köndte," Praetorius, *De organographia*, 65. Admittedly Praetorius is referring to the transposing keyboard, a device not common to all *cimbali cromatici*, in this sentence. To some extent, however, the principle remains the same whether the keyboard is transposed or the player does it the hard way; the essential requisite is the ability to play at different pitches. (The transposing device will be discussed at length in the next article.)

that its advantages were made use of when playing solo keyboard music that included chromatic notes not normally available on ordinary harpsichords tuned in a mean-tone temperament. (The same would certainly be true in the case of instruments that had only two split keys per octave, such instruments being more common than the *cimbalo cromatico*.) On the other hand, the inclusion of these chromatic notes in a piece of music is no proof that such an instrument was required; the soloist, like the accompanist, was presumably in the habit of retuning individual notes to suit as necessary.[17]

Music Specifically for *Cimbalo Cromatico* (Mayone, Trabaci, del Buono)

A small amount of music exists that was composed specifically for the *cimbalo cromatico*. Surprisingly, all such compositions that have survived — as far the present writer is aware — are to be found in printed sources. While this would appear to suggest that a good number of such instruments must therefore have existed, the following discussion of the music may qualify that assumption. The known repertoire consists of the following works:

Ascanio Mayone	*Toccata Quarta per il Cimbalo Cromatico* and *Toccata Quinta per il Cimbalo Cromatico*, both from the *Secondo Libro di Diversi Capricci per Sonare* (Naples, 1609)[18]
Giovanni Maria Trabaci	*Toccata Terza, & Ricercar sopra il Cimbalo Cromatico* from the *Secondo Libro de Ricercate, & altri varij Capricci* (Naples, 1615)[19]
Gioanpietro del Buono	*Sonata Stravagante, e per il Cimbalo Cromatico*, from *Canoni, Oblighi et Sonate in varie maniere sopra l'Ave Maris Stella* (Palermo, 1641).

[17]See below for further discussion of this aspect with reference to the music of Mayone, Salvatore, Storace, G. Strozzi, and B. Pasquini.

[18]See above, n. 2.

[19]Facsimile reprint (Florence, 1984).

To this list may be appended Adriano Banchieri's *Sonata Settima Concerto Enarmonico*, included in the first part of *L'Organo Suonarino*,[20] M. Pesenti's *Correnti, gagliarde, e balletti diatonici, trasportati parte cromatici . . . .*[21] and the brief examples composed by Mayone for Colonna's *La Sambuca Lincea*.[22] Although the *cimbalo cromatico* is not specified in any of these three cases, some such keyboard is required for the Banchieri piece, and is appropriate for several of the Pesenti dances and the Mayone examples (destined for keyboards with twenty-four and thirty-one divisions per octave respectively).

As already stated, Mayone's two toccatas are the earliest known pieces for which the *cimbalo cromatico* is specified. It is strange that the composer fails to mention the instrument in his preface, which deals with the different types of music contained in the book. At first sight, *Toccata Quarta* appears to make quite modest demands, while *Toccata Quinta* includes e# and b#, using the "sharp" end of the *cimbalo cromatico* to its limit. On closer examination, however, it becomes clear that Mayone composed these pieces very carefully so that they can in fact be played on much less complex instruments.

In *Toccata Quarta*, for instance, he writes A^{b}, a^{b}, and $a^{b'}$, but nowhere in the piece do we find any g sharps. Consequently, if an ordinary harpsichord is used, all the g sharps should simply be retuned to give a flats — a procedure described in Cima's example 11.[23] In the same piece, both d flats and c sharps occur; Mayone has, however, cleverly avoided using the two notes in the same octave. d^{b}, $d^{b'}$, and c#" are required, but not c#, c#', or $d^{b''}$. Here again, therefore, it is possible to retune the two relevant notes on an ordinary keyboard. (If a harpsichord with two extra chromatic keys for d# and a^{b} be used, retuning is not necessary when the *Toccata* is transposed up a whole tone.)

Toccata Quinta, on the other hand, as already mentioned, is bristling with sharps. Flats, however, are totally absent in the piece. Consequently only fourteen different pitches within the octave are required, i.e. the seven notes of the diatonic scale together with each of

---

[20]A. Banchieri, *L'Organo Suonarino* (Venice, 1605), vol. 1, 34-35.

[21]Martino Pesenti, *Correnti, gagliarde, e balletti diatonici, trasportati parte cromatici, e parte henarmonici . . . libro quarto, Op. 15* (Venice, 1645, 1646).

[22]See above (n. 3).

[23]Cf. Raynor, *Cima*, 70 and 90.

those seven notes sharpened by a semitone. Harpsichords furnished with two extra keys per octave (a^{b} and d#) had indeed fourteen different pitches. It is quite possible to play this Toccata on such an instrument transposed up a minor third given a keyboard whose range extends up to f". That this range was not unusual for such instruments is known from surviving examples like the virginal (1617) by Boni.[24]

Mayone furthermore appears to have constructed *Toccata Quinta* in such a way as to make performance on a normal keyboard possible, too. The unusual chromatic notes (d#, a#, e#, and b#) occur only in a rather strange modulatory passage (bars 6-20 in my edition). It is unlikely to be a coincidence that this passage begins and ends with the same chord of E. Not only that, bar 22 resumes the kind of writing found in the first five and a half bars. Thus a performance omitting the modulatory bars can still be musically satisfactory.[25] In case the idea of omitting a section of a published composition in this manner should appear to reveal a somewhat cavalier attitude, it is worth recalling that composers of the period took a more lenient view than their later counterparts. For instance, Frescobaldi, in his preface of 1616 — subsequently reproduced in both *Libri di Toccate* — stated quite clearly that he composed his toccatas in sections that are separated from each other in order that the player should feel under no obligation to play right through to the end of a piece, but may terminate it wherever he pleases.[26] Such freedom was also applied by the copyist of the German keyboard tablature source of Claudio Merulo's first two books of toccatas; he simply omitted any section that was composed in strict polyphonic style.[27]

Mayone's *Toccata Quarta* and *Toccata Quinta* are both artistically convincing compositions. Nevertheless, their designation, *per il Cimbalo Cromatico*, is almost incidental. Neither piece makes any real use of the

---

[24]For an illustration of this virginal, see Frederick Hammond, *Girolamo Frescobaldi* (Cambridge and London: Harvard University Press, 1983), 108. It has recently been established that this instrument was not made by Boni. (See the latter part of the next article.)

[25]A version abridged in this way is included, alongside a performance of the complete *Toccata* (transposed up a third), in the present writer's recording of Mayone's keyboard works, *EMI/deutsche harmonia mundi 16 9550 3.*

[26]"Nelle toccate ho havuta consideratione . . . che anche si possa ciascuno di essi passi sonar separato l'uno dall'altro: onde il sonatore senza obligo di finirli tutti potrà terminarli ovunque più li sarà gusto."

[27]Cf. C. Merulo, *Toccate per Organo*, ed. Sandra dalla Libera (Milan, 1959), vols. 1 and 2, in which the relevant sections are indicated.

range of tonalities offered by such an instrument. One can only assume that Mayone did not wish to exclude the chromatically silent majority of harpsichordists, and that he expected any intelligent musician to recognize the possibility of the alternative solutions outlined above without any prompting. It is temping to accuse him of window-dressing and suppose that he perhaps wished to flatter some potential patron who happened to possess a *cimbalo cromatico*. It is quite possible that chromatic and enharmonic music was still perceived as the preserve of an aristocratic elite in Naples at this time, continuing a tradition which Vicentino derived from ancient Greece.[28] Maybe Don G. Battista Suardo Concobletto, the dedicatee of Mayone's *Secondo Libro*, was the proud possessor of a *cimbalo cromatico*.

Trabaci's *Toccata Terza, & Ricercar sopra il Cimbalo Cromatico* does not admit any concessionary solutions and may therefore be regarded as the earliest surving *bona fide* composition for the *cimbalo cromatico*. Here, although not all of the available nineteen different pitches are in fact used, the whole structure of the piece depends upon the extended chromatic range of the instrument. The *Toccata* modulates from A to d#, the *Ricercar* from d# back to A. These tonal centers, being almost exactly half an octave—or a tritone—apart, may be perceived to be extremes. Trabaci runs into trouble since, as he himself points out in an accompanying explanation, he has overstepped the limits of the normal *cimbalo cromatico* in writing f##. Incidentally this provides further evidence for the fact that *cimbalo cromatico* meant an instrument with nineteen divisions to the octave. He tells us, in the absence of this note, to play the minor third above d# (i.e. f#)[29] It is perhaps strange that it did not occur to Trabaci that, since the piece does not require any

[28]Nicola Vicentino, *L'Antica Musica*, f. 10v.: ". . . che (come li scrittori antichi dimostrano) era meritamente ad altro uso la Cromatica & Enarmonica Musica riserbata che la Diatonica, perche questa in feste publiche in luoghi communi à uso delle vulgari orecchie si cantava: quelle fra li privati sollazzi de Signori e Principi, ad uso delle purgate orecchie in lode di gran personaggi et Heroi s'adoperavano."

[29]M. Praetorius also advises avoidance of playing a false major third. He offers three solutions: leaving out the third altogether, playing the minor third, or playing the note with such a fast ornament that the dissonance will not be noticed. ("Wenn nemlich das ♮ mit dem fis, und in der mitten die Tertia major das Dis, welches etwas zu jung und zu hoch und also dargegen falsch ist, gegriffen werden muss. So muss nicht allein ein Organist solches mit fleiss durchsehen und uberschlagen sondern auch gute achte haben, *dass er entweder die tertiam gar aussen lasse, oder die tertiam minorem, das d tangire*, oder aber mit scharffen mordanten es also vergütte, damit die Dissonantz so eigentlich nicht observiret und gehöret werde." *Syntagma Musicum*, vol. 3 (Wolfenbüttel, 1619), Ch. 9.

flattened note beyond b^b, one of the keys lying idle (g^b or a^b) could easily be retuned to provide the missing f##.

There is, however, a very much simpler solution, which is to transpose the piece down one whole tone. Not only is it then all playable on the *cimbalo cromatico*, it is incomparably easier to play since it uses far fewer of the "third order" of chromatic notes. Significant, too, is the fact that after transposition the lowest note is C, which was of course the bottom note on most keyboards of the period. It is quite inconceivable that Trabaci was unaware of this fact. One must therefore suspect him of being even more adept than Mayone at pulling the wool over people's eyes. Taking the printed version of the piece together with Trabaci's rather verbose note, one can only assume that he wanted to give the impression that he was so used to playing the *Cimbalo in Armonico*[30] (i.e. *archicembalo*) that he was unable to content himself with the privations of a mere *cimbalo cromatico*. It seems likely, therefore, that the piece was originally conceived by Trabaci to start and end on G, proceeding to c# in the middle. A keyboard transcription thus transposed is included in Appendix B.

Del Buono's piece for *cimbalo cromatico* is very different. Structurally it is quite conservative, while its attitude to tonality is more adventurous. The use of a *cantus firmus* excludes the possibility of modulations that might lead anywhere. Instead, del Buono enjoys juxtaposing quite unrelated triads. The effect, as Apel has pointed out, is not unlike some of Giovanni de Macque's *Stravaganze* — hence, perhaps, del Buono's choice of title, *Sonata Stravagante*.[31] On the other hand, the sense of continuity and rhythmic regularity in del Buono's piece creates a very different atmosphere — somewhat anticipatory of the neo-Baroque ramblings in the more meditative examples of Max Reger's organ music.

The *Sonata Settima Concerto Enarmonico*, which Banchieri included in his *L'Organo Suonarino (Primo Registro)* is a very straightforward short piece in the key of b minor, requiring a#, a#', d#, and d#'. It is very strange that Banchieri makes no reference whatever to this piece in the text of his book, nor is there any mention of chromatic split keys, let

[30]Trabaci, *Secondo Libro de Ricercate*, 87. This volume was dedicated to the Viceroy of Naples. It is possible that the viceregal court possessed a *cimbalo cromatico*, or even an *archicembalo*.

[31]Cf. Willi Apel, *The History of Keyboard Music to 1700*, tr. and rev. by Hans Tischler (Bloomington and London: Indiana University Press, 1972), 493, which includes a transcription of the final bars of the *Sonata Stravagante, e per il Cimbalo Cromatico*.

alone chromatic or enharmonic keyboards, in the same author's later *Conclusioni nel Suono dell'Organo*, in which various rather fancy organs are briefly described.[32] That the piece was intended for a keyboard with extra (unusual) chromatic keys is suggested by the fact that the two notes prescribed that are not available on normal mean-tone keyboards, a# and d#, are printed as a^{b} and d^{b} [*sic*] respectively, with the exception of one bar in the tenor stave which probably represents a printer's error. It is conceivable that the flat signs were some kind of shorthand for the closest flat key and that the system is analogous to that used by Cima already discussed. Since the notes a^{b} and d^{b} simply did not exist for the ordinary player, there was perhaps no reason why the signs could not be used in this way. At the same time, it is worth noting that a printed d# occurs in two other pieces in the same collection: the *Sonata Terza, Fuga Grave* and the *Sonata Quarta, Fuga Cromatica*. Since the latter is in no sense 'chromatic', one must assume that the appearance of d# accounted for its title. Both pieces were reprinted in Banchieri's *L'Organo Suonarino (Quinto Registro)* with different titles as elevation toccatas alongside a new piece containing d# — the *Ricercata del Terzo & Quarto Tuono*.[33] In most instances, the d# obviously needs to sound in tune so that an e^{b} is not a satisfactory substitute. All these pieces, including the 'enharmonic' one, can be played on a normal mean-tone keyboard when transposed down a whole tone. (It should, however, be pointed out that *Sonata Quarta, Fuga Cromatica* would then require E^{b}, the *Ricercata del Terzo e Quarto Tuono* F#, notes not available on a simple short-octave keyboard.)

Martino Pesenti's Opus 15 contains only very straightforward dance pieces which can be played on any normal keyboard tuned to a mean-tone temperament.[34] However, each piece in the collection is also reprinted transposed in such a way that either a *cimbalo cromatico* or an *archicembalo* would be necessary.[35] It is interesting that Pesenti never refers to the *cimbalo cromatico*; in his introduction he describes two

[32](Bologna, 1609), 14-15, 65-67.

[33]*L'Organo Suonarino (Quinto Registro)* (Venice, 1611), p. 37. Four of the eight pieces in the *Primo Registro* were thus reprinted. They do not include the *Sonata Settima Concerto Enarmonico*.

[34]Pesenti, *Correnti.*

[35]See Apel, *History*, 436 for a transcription of a *corrente* in F major together with its transposed version in D# major.

more complicated instruments.[36] The conspicuous absence of any piece that makes use of more than twelve different pitches in the octave is remarked upon by the composer himself. He tells us that he ought to have written a toccata passing gradually from the diatonic to the chromatic and on to the enharmonic *genus*, and that this would have been agreeable to listen to. The reason that he decided against this was simply that it was difficult to find an instrument on which to play such a composition.[37] That he did not consider writing a toccata even for two of the *genere* (diatonic and chromatic) suggests that in Venice *cimbali cromatici* were equally rare. Finally he points out that as lutes and viols can play in all three *genere*, the different transposed versions of the *corrente*, *gagliarde* and *balletti* can be played on them.[38]

Since many of Mayone's examples in Colonna's *Sambuca Lincea* are playable on the *cimbalo cromatico*, it is perhaps appropriate to mention them here, especially since Mayone wrote for the instrument and may conceivably have possessed one.[39] Most of these short pieces are written in imitative vocal style based on the chromatic and enharmonic versions of the ancient Greek tetrachord. They leave little doubt that Mayone was conversant with Vicentino's *L'Antica Musica*. It is worth comparing Mayone's second example of *cromatico intenso* (*Sambuca Lincea*, pp. 95-96) with Vicentino's "Hierusalem convertere" (*L'Antica Musica*, fol. 70v-71). In fact, Mayone is rather less adventurous than Vicentino. Some of the pieces are furnished with texts. The "Stabat mater" verse (*Sambuca*,

---

[36]These are the instruments made by Domenico da Pesaro in 1548 for Zarlino and a slightly different one made by Trasuntino. Contrary to many references in recent writings, the former had not 19 but 24 notes in the octave, as a close reading of Zarlino's text *Le Istitutioni Harmoniche* (Venice, 1558), 140, and Pesenti's preface make clear. See the next article for a full discussion of this question.

[37]"Dovevo fare una Toccata passando gentilmente dal Diatonico, al Cromatico, & al Henarmonico, ritornando indietro all'Henarmonico, al Cromatico, & al Diatonico, che unendo insieme tutti tre li generi sarebbono stati soaui da sentirsi; mà non l'ho composta, perche è difficile il ritrovarsi un Clavicembalo con tutti tre li predetti generi . . ," M. Pesenti, *Correnti*, preface. The entire preface is reprinted in Claudio Sartori, *Bibliografia della musica strumentale italiana* (Florence, 1952), 392-93.

[38]Such a solution would of course lack the pure major thirds found on the keyboard instrument that Pesenti had in mind. That some lutenists had been in the habit of playing in all twelve "keys" for nearly eighty years is shown by Giacomo Gorzani's manuscript *Libro de Intabulatura di Liuto* (1567), which contains dance movements in all keys. Cf. Wolfgang Boetticher, "Gorzanis," *Die Musik in Geschichte und Gegenwart*, vol. 5, and Arthur J. Ness, "Gorzanis," *New Grove*, vol. 7.

[39]Colonna, 92ff. Transcriptions are given in P. Barbieri, "La *Sambuca Lincea e* il *Tricembalo*," in *La musica a Napoli durante il seicento: Atti del convegno internazionale, Napoli, 1985* (Rome, 1987), 192ff.

98) is described as using all three *genere* (i.e. diatonic, chromatic and enharmonic), and is still playable on the *cimbalo cromatico*. (Singers would find an accompanying instrument particularly helpful in this example, where the alto voice shifts down a diesis from a^{b}' to g#'.) The most novel music that can be played on the *cimbalo cromatico* (if one string is retuned: a^{b} to g##) is undoubtedly the *enarmonico intenso* verset. The progressions used here make all the music discussed so far appear rather unenterprising. Mayone combines the enharmonic Greek tetrachord with imitative polyphony, the opening point (b-b#-c'-e') being imitated at the lower fifth (e-e#-f-a). Such innovative music almost begs the question whether, had the *cimbalo cromatico* had a more successful career and been take seriously by one of the great contrapuntists of the baroque period, the world might not have been so much the richer.

Works that Venture beyond the Twelve Pitches

In addition to these pieces, obviously composed for a special kind of keyboard, there is a certain amount of music of the period that ventures beyond the confines of the twelve pitches normally available on a mean-tone tuned harpsichord or organ. A survey of this repertoire will perhaps throw some light on the role of the *cimbalo cromatico* and other instruments with split keys.

The earliest use of a d# is found, somewhat surprisingly, in a printed source as far back as 1543. This is in Girolamo Cavazzoni's *Ricercar Primo*.[40] However, since each sharp in the original print is indicated by the addition of a mere dot above or below the relevant note, some caution in accepting the authenticiy of this particular instance is perhaps justifiable. (Another instance, in bar 14 of *Ave maris stella* from the same book, is almost certainly unintentional, as it is hardly likely that the tenor would proceed from c♮' to d#'; the dot in question presumably refers to the f#' in the alto, which has a second dot above the right-hand stave simply because the note has an upward stem instead of a downward one.) The *Ricercar* might be either harpsichord or organ music. If the d# is authentic, Cavazzoni presumably had a split e^{b}/d# key in mind. Since there is no e^{b} in the piece, an ordinary harpsichord could be retuned.

[40]Hieronimo de Marcantonio da Bologna, detto d'Urbino [= Girolamo Cavazzoni], *Intavolatura cioe Recercari Himni Magnificati . . . Libro Primo* (Venice, 1543), cf. fol. 3, first note alto part. Modern transcription, ed. Oscar Mischiati, G. Cavazzoni, *Orgelwerke*, vol. I (Mainz, 1959), cf. p. 3, bar 30.

There is no doubt about the d# in Rocco Rodio's *Quarta Ricercata* of some thirty years later.[41] While the same alternative possibilities (split key or retuning) obtain here, it is also conceivable that a dissonance was intended, given the rather strange part-writing: the d#' follows a suspended e' and apparently creates a B major chord on the off-beat. The d#' is in turn suspended — over an E major triad on the beat. When it resolves upwards to e', it moves in parallel fifths with the tenor (g#-a). It may well be that Rodio envisaged a sounding e^{b}'. Some years later he published a madrigal *Del genere cromatico*, which included a passing chord — or discord — consisting of d#', g', and b^{b}' placed between two A minor triads.[42]

The next printed d#s come from Ottavio Bariolla's *Ricercate per suonar l'organo* (Milan, 1585).[43] The second, fourth, and seventh ricercars include cadential trills on d#' and d#"; the second and fourth ricercars also have instances of an unornamented d# on an off-beat. Remembering Praetorius's later advice (see above, n. 29) the trilled d#s might in fact be played with a sounding e^{b}. In the other cases a dissonance might possibily be acceptable; it may on the other hand be the case that these d's were sharpened only in the MS transcription and not in the original print, just as some of the ornamentation looks as if it was perhaps added at the transcription stage.

Similar cadential trills on d#" and d#' are to be found in intonations by both Andrea (*Quarto tono*) and Giovanni (*3° e 4° tono*) Gabrieli in the 1593 print.[44] The same also occurs in G. Gabrieli's *Fantasia IV toni*.[45]

---

[41]Rocco Rodio, *Libro di Ricercate a Quatro Voci* . . . (Naples, 1575). Transcription of the *Quarta Ricercata* in R. Rodio, *Cinque Ricercate, una Fantasia*, ed. Macario S. Kastner (Padua, 1958); cf. bar 38, soprano part.

[42]The madrigal is "Madonn'il vostro pett' è tutto ghiaccio" from *Il Secondo Libro di Madrigali a Quattro Voci*, Venice, 1587. This *Durchgangs=Dissonanz* is quoted and discussed in Theodor Kroyer, *Die Anfänge der Chromatik im italienischen Madrigal* (Leipzig, 1902), 133.

[43]The original print no longer exists. Its contents survive in German keyboard-tablature as transcribed in *I-Tn Giordano 8*, a source dating from 1637-1639 (cf. Oscar Mischiati, "L'intavoltura d'organo tedesca della Biblioteca Nazionale di Torino: catalogo ragionato," *L'Organo*, 4, 1963, 1-154.) Modern edition transcribed by Clyde W. Young in *Corpus of Early Keyboard Music*, 46 (Rome, 1986).

[44]A. Gabrieli, *Intonationi d'organo . . . libro primo* (Venice, 1593). Modern editions: A. Gabrieli, *Intonationen*, ed. Pierre Pidoux (Kassel, 1941), 6; G. Gabrieli, *Composizioni per organo*, ed. Sandra dalla Libera, vol. I (Milan, 1957), 3.

[45]Source: MS *D-Bds. Lynar A1.* The transcription is in the edition cited in the preceding footnote, I, 47-48.

Probably the earliest published music intended primarily for harpsichord to include a d# is Mayone's *Partite sopra Rogiere* (1603).[46] As there is no e^{b} anywhere in these variations, the problem can be solved by retuning. It should, however, be remembered that Mayone was not only a keyboard player but also a noted harpist and could have conceived this composition for the harp. The *arpa doppia* had strings for each note of the chromatic 12-note scale with duplicate strings for each d and a. Vincenzo Galilei suggested that, whenever the extra chromatic notes were required, one of these extra strings could be tuned to provide d# or a^{b} as necessary.[47] The *arpa doppia* would then have had the same fourteen different pitches as keyboard-instruments that had two split keys in each octave.

The first printed keyboard composition to require both d#' and e^{b}' was Trabaci's *Consonanze Stravaganti* of the same year as Mayone's publication.[48] No explanatory note is offered. It is quite possible that the composer had split keys in mind, but it should be noted that the d#' occurs only in an augmented triad (together with B and g♮'), after which it rises to e' before resolving at the end of the bar onto d♮. Thus a d# that is not quite in tune (i.e. e^{b}) was perhaps deemed acceptable or even desirable in order to give a special effect on the discord. Many instances of this kind of usage of chromatic notes may be observed well into the second half of the 17th century, especially in southern Italian keyboard music.

Mayone's *Secondo Libro* (1609), already discussed in the context of the Toccatas for *cimbalo cromatico* (see above p. 7), also contains the earliest occurrence in printed music for "ordinary" keyboard of both g# and a^{b} in the same piece (*Recercar sopra il Canto Fermo di Costantio Festa*), as well as an a^{b} in a piece written presumably for organ (*Recercar sopra Ave Maris Stella*).

Several of the keyboard intabulations of Giovanni Gabrieli's motets found in the MS *I-Tn Giordano 4* require both d# and e^{b}, also both a^{b}

---

[46] *Primo Libro di Diversi Capricci per Sonare* (Naples, 1603). In my own edition (Padua, 1981), cf. pp. 44-56, d#s occur in the fifth and twelfth *partite*.

[47] ". . . mancano in oltre per la perfettione della diversità de concenti, i quattro diesis di d, & i quattro b molli di a, per lo che in quelle Cantilene dove tali corde *occorrano*, vi si accomodano i loro unisoni che sono tra le corde Cromatiche . . ." V. Galilei, *Dialogo della Musica Antica, et della Moderna*, (Florence, 1581), 144.

[48] Cf. Giovanni Maria Trabaci, *Ricercate, Canzone Franzese . . . Libro Primo* (Naples, 1603), 116.

and g#.[49] In each case these notes should clearly be in tune and therefore a keyboard with split keys is required.

A piece which, according to Apel, is another example of an intabulation of a (presumably unidentified) vocal composition, this time by Gesualdo, is the *Canzon franzese del Principe* in *GB-Lbl Add. 30491*.[50] Others take it to be an original keyboard composition, Gesualdo's only known essay in this genre.[51] Apart from d#s (no e^{b}s), both a#' and b^{b}' occur; furthermore, both of these notes need to be in tune. Here, therefore, a *cimbalo cromatico* would be useful and, in any case, an instrument with at least three split keys per octave is implied.

Roland Jackson has suggested that Trabaci's *Gagliarda Quinta Cromatica à cinque detta la Trabacina* (1615) was conceived for *cimbalo cromatico* like the *Toccata & Ricercar* from the same book discussed above.[52] Had that in fact been the case, it seems likely that the instrument would have been specified in the title. Perhaps Trabaci composed the piece primarily for viols. It contains a#s and e#s. On the keyboard it could be transposed down a whole tone; it would then require a split key for d#' and e^{b}', both of which notes would occur. (A^{b} and a^{b} can be provided by retuning since neither G# nor g# would be needed.)

Keyboard music published in the North of Italy tended to be more conservative. Giovanni Picchi's *Padoana dette la Ongara* (1621?) contains d#' or d#" at three cadences where the music contains much movement; where there is less movement, the cadence is made from an open fifth without the d# as in bar 1.[53] This is presumably music for the amateur, who was not expected to be able to retune e^{b} to d#.

---

[49]Cf. A. Gabrieli, *Intonationen* (ed. Pidoux), vol. 3. It is not known who made these arrangements of the motets. The ones in question are nos. 5, 10, and 12. According to Oscar Mischiati, "L'intavolatura," the MS was not compiled until 1640.

[50]According to Willi Apel the *Canzon* is ". . . offenbar eine Intavolierung eines Madrigals oder Chansons von Gesualdo," *Acta musicologica* 34 (1962): 130. Modern transcription ed. Roland Jackson in *Corpus of Early Keyboard Music*, 24 (Rome, 1967).

[51]Cf. *Corpus of Early Keyboard Music*, 24, x, in which Jackson assumes without question that it is a keyboard piece by Gesualdo, while admitting that there may be a vocal model.

[52]Roland Jackson, "Trabaci," *New Grove*, vol. 19.

[53]Modern editions ed. Bernard Thomas (London, 1980), and ed. I. Evan Kreider, *Corpus of Early Keyboard Music*, 38 (Rome, 1974).

A notable exception is found in Frescobaldi's first publication of instrumental music, where the seventh *Fantasia* contains d# and d#'.[54] This amazing modulatory composition is centered on G (mixolydian) and makes its way to E major; the d#s need to be in tune. There is no e^{b}. Frescobaldi published this music after spending a year in the Low Countries, where keyboard music of the period frequently used d# (cf. Sweelinck et al.). This might explain his use of d# in the Fantasias since none of his other compositions published before 1627 strays beyond the confines of the normal mean-tone keyboard, even though pieces such as the *Toccata XII* (1615) and the *Capriccio Cromatico con Ligature al Contrario* seems to be straining at the seams. In the *Capriccio sopra La Sol Fa Re Mi* there is a note that logically ought to be a^{b}' but is in fact a' (bar 64).[55]

A manuscript source of Italian music of the period at Christ Church, Oxford (Och 1113) contains an elevation toccata (*Per la Com*), which has a passing d# over a seventh chord.[56]

1626 saw the publication in Venice of a set of toccatas, ricercars, and canzonas by Giovanni Cavaccio.[57] Here, a slow toccata, the *Toccata Quarta à 4, detta la Licina*, contains d#, d#' and d#", all of which need to be in tune. There is also a single brief instance of a passing d#' in *Ricercar Prima à 4,* in which, given the chromatic context, could be a sounding e^{b}'. In the same publication there is an obvious avoidance of a^{b}s in the *Decima Nona Canzon Francese à 4* in a secondary subject that appears several times with the notes g' / e' e^{b}' e' e^{b}' / d' invariably answered by c' / a b^{b} a b^{b} / f g.

It is difficult to put an exact date on the keyboard compositions of Tarquinio Merula, since they were not published during his lifetime.[58]

---

[54]Girolamo Frescobaldi, *Orgel= und Klavierwerke*, ed. Pidoux (Kassel, 1949), vol. 1, 25. *Fantasia Quinta* in the same collection also contains a d#' but, as the editor points out, this may be a misplaced accidental in the 1608 print.

[55]G. Frescobaldi, *Il Primo Libro di Capricci* (Rome, 1624), ed. Étienne Darbellay in *Monumenti di musica italiana* 8 (Milan, 1984). Also see *Capriccio sopra La Sol Fa Re Mi*, bar 64, canto, second 8th note.

[56]Cf. John Caldwell, "Sources of Keyboard Music to 1660" (section 2, vi), *New Grove*, where this MS is dated c. 1620.

[57]G. Cavaccio, *Sudori Musicali* (Venice, 1626). Modern edition (with note-values halved) by I. Evan Kreider, *Corpus of Early Keyboard Music* 43 (Rome, 1984).

[58]Cf. T. Merula, *Composizioni per Organo e Cembalo*, ed. Alan Curtis, with a foreword by Oscar Mischiati and Luigi F. Tagliavini (Brescia and Kassel, 1961).

Most of them seem likely to date from ca. 1630. The two best known pieces each require a keyboard with one split key per octave. The *Sonata Cromatica* has d#' and d#" (but no e^{b}s), as well as a^{b}' and g#'. The *Capriccio Cromatico*, on the other hand, requires both d# and e^{b}, as does the keyboard version of the *Canzon "La Marca"* (originally published as an example piece in 1615). Finally, the other *Capriccio* (preserved in a later MS in Leipzig) has a^{b} (but no g#).

We have noted how conservative Frescobaldi appeared to be in his 1615 and 1624 prints—at least as far as use of extra chromatic notes is concerned. *Il Secondo Libro di Toccate* . . . (1627) makes something of a move away from this attitude in that five pieces need an a^{b}. (There are no d#s.) It is particularly odd that the ornamental figure in bar 4 of the *Toccata Prima* does not have an a^{b}', when at bar 16 there is an a^{b}' and an a^{b}, both of which need to be in tune.[59] The same notes are also used in *Toccata Quinta* (bar 19), *Toccata Sesta* (bars 82-83), and *Toccata Undecima* (bars 63-64). Since the first two of these are conceived primarily for organ, and since *Toccata Undecima* needs g#s as well, retuning on a twelve-note-per-octave keyboard is not possible, whereas it could solve the problem in *Toccata Prima*. In the context of *Toccata Undecima* g#s might just be acceptable. In *Quinta* and *Sesta* they are perfectly acceptable.

Somewhat ironically, it is in the *Fiori Musicali* of 1635, a publication containing shorter pieces, including toccatas of a far less virtuoso nature than those of 1615 or 1627, that Frescobaldi becomes chromatically more adventurous; d#' appears in the elevation toccatas of the second and third masses. While it could be argued that in these two cases the d#' need not necessarily be in tune (in the *Messa degli Apostoli* it appears in a seventh chord; in the *Messa della Madonna* it forms a *durezza* between B and g'), it clearly must be consonant at the cadence in which it occurs in the *Canzon Quarti toni*.[60] The *Recercar con obligo del Basso come appare* modulates to such an extent that both g# and a^{b} (also g#' and a^{b}') need to be well in tune.[61] For the *Fiori Musicali*, therefore, two split keys per octave are clearly implied, unless Frescobaldi had some new

[59]See Étienne Darbellay's edition, MMI 5 (Milan, 1979), 1-2.

[60]Girolamo Frescobaldi, *Fiori Musicali* (Venice, 1635). Modern transcription, ed. Pierre Pidoux (Kassel, 1953), cf. 43, 60, and 46.

[61]*Fiori*, 44-5.

temperament in mind—hardly a practical proposition in the context of a publication designed for widespread use by organists.

Frescobaldi goes one stage further in his next and last publication, the *Aggiunta* for his 1637 edition of the first book of toccatas.[62] Since this consists mainly of dance sets, it is more likely to have been conceived in terms of the harpsichord. In the first two sets d# and d#' are found. There are no e^{b}s. In the third set, the *Passacagli* uses an a^{b} (bar 13) that must be in tune, as well as a d^{b}" (bars 4-6) forming a seventh chord (for which, therefore, c#" could arguably be substituted). All of these notes are found also in the *Cento Partite sopra Passacagli*, where it is necessary for all of them, including the d^{b}", to be in tune. At the same time c#s, g#s, and e^{b}s also need to be in tune in this piece.

In the light of this, it is worth considering the music of composers influenced by Frescobaldi before returning to the Neapolitan scene. The three toccatas at the end of *I-Rvat Chigi Q IV 25* (fol. 51ff) have in fact been attributed to Frescobaldi.[63] They would seem rather to be in the style of Frescobaldi's pupil, Johann Jacob Froberger.[64] The third of these toccatas contains the unusual chromatic notes: a^{b}, d^{b}, g^{b}, and c^{b}.[65] Since b natural, f#, and c# also occur in the piece, either a *cimbalo cromatico* or something approaching equal temperament seems to be indicated here. If the music is indeed by Froberger, the latter could be the case. Werckmeister reports that Froberger composed a canzona that modulated round the circle of twelve fifths—a piece that has unfortunately been since lost.[66] The liberal use of sharps in Froberger's organ pieces from 1649 onwards would also suggest tempered thirds unless the Viennese court possessed an organ with three or more split

[62]Frescobaldi, *Il Primo Libro di Toccate*, ed. Étienne Darbellay, *Monumenti di musica italiana* 4 (Milan, 1978).

[63]Transcribed and published as compositions by Frescobaldi, ed. W. Richard Schindle in *Corpus of Early Keyboard Music*, 30 (Rome, 1968), 19-33.

[64]This has also been suggested by Gustav Leonhardt in an unidentified article quoted in Alexander Silbiger, *Italian Manuscript Sources of 17th Century Keyboard Music* (Ann Arbor, 1980), 161.

[65]In Schindle's edition the c^{b} has been suppressed. In the source a flat is placed immediately before the c' quaver in the tenor part in bar 69.

[66]Andreas Werckmeister, *Hypomnemata Musica* (Quedlinburg, 1697), 37.

keys per octave, an unlikely proposition in the absence of any documentary evidence.[67]

On the whole, the tendency when moving outside the twelve-note mean tone system was to go more towards the sharp, rather than the flat, end of the spectrum, as has been noted in compositions written specifically for the *cimbalo cromatico*. The c^{b} noted in the above paragraph appears to be unique, and g^{b} is also very rare.

A further MS from the Chigi collection, *I-Rvat Chigi Q IV 27*, contains pieces in different keys that require a^{b}, d#, and a#.[68] As sharps and flats do not occur within the same pieces, retuning is always possible.

Another foreigner whose music is basically Italian and indeed found in an important Italian source (*I-Bc DD/53*) is Johann Caspar Kerll.[69] There is only one instance of an a^{b} in Kerll's keyboard music. This is in *Toccata Seconda* where it forms the bass of a seventh chord; d#s are plentiful, being found in *Toccata Terza, Toccata Quarta Cromatica con Durezze e Ligature*, *Toccata Quinta*, and *Toccata Ottava*. There are no e^{b}s in any of these pieces. *Toccata Quarta* requires a# and a#' (no b^{b}s). Since this piece appears to be in the tradition of the elevation toccata, performance on an organ would be appropriate. Retuning is therefore not a feasible solution. *Toccata Settima* has a#, and a#' in the Bologna source where the lost Berlin source, reproduced in *Denkmäler der Tonkunst in Oesterreich*, apparently has a naturals.[70] The canzonas remain within the limit of the twelve-note mean-tone system; this is particularly striking in the case of *Canzona Quarta*, which fails to use d#, although it has E as its tonal center.

---

[67]Froberger's 1649 MS contains a slow-moving organ toccata that has d#", and $d^{b'}$, and a^{b} as well as $e^{b''}$, c#', and g#. All of these need to be reasonably well in tune. In the 1656 and 1658 MSS, Froberger writes a#, e# and even b#. It may be significant that he uses the sign x, not #, for these notes. He seems to have been the first composer to use a key-signature of four sharps (*Ricercar VI*, 1658). For a facsimile of the autograph see *17th Century Keyboard Music*, ed. Alexander Silbiger (New York and London, 1987). All these works are also published in: J. J. Froberger, *Oeuvres Complètes pour Clavecin* [*sic*], 1, ed. Howard Schott (Paris, 1977).

[68]Modern edition by Harry Lincoln in *Corpus of Early Keyboard Music* 22/iii (Rome, 1968). Silbiger, *Italian Manuscript Sources*, suggests that this MS source dates from the 1640s.

[69]According to Silbiger, this MS was compiled in the 18th century. Cf. Silbiger (ed.), *17th Century Keyboard Music* (Garland: New York and London, 1987), 10, v.

[70]Johann K. Kerll, *Ausgewählte Werke* 1, ed. Adolf Sandberger, *Denkmäler deutscher Tonkunst* 2, II, ii (Leipzig, 1901), p. 21, end of bar 27.

Tagliavini has pointed out that the music of Michelangelo Rossi also apparently stays within the confines of the simple mean-tone keyboard, but that, in fact, a printed e^{b} sometimes represents a d#.[71] There are, however, only two instances of this: in the *Quarta toccata*, where it occurs in brief, off-beat chords of the seventh, and in *Settima toccata*, where it is used as an off-beat, chromatic passing-note. In both pieces, therefore, a sounding e^{b} is probably acceptable.

Naples: Salvatore, Storace, and Strozzi

Moving back to Naples and the South of Italy, the home of the few pieces published for the *cimbalo cromatico*, three important seventeenth-century keyboard publications remain to be examined. The first two are:

Giovanni Salvatore, *Ricercari a Quattro Voci, Canzoni Francesi, Toccate et Versi* (Naples, 1641)[72]

Bernardo Storace, *Selva di Varie Compositioni d'Intavolatura per Cimbalo ed Organo* (Venice, 1664).[73]

Since Storace was active in Sicily, his music belongs to the Southern Italian school, even though it was published in Venice.

Tagliavini has suggested that these two books of keyboard music reveal a continuing development towards the uninhibited use of chromatic notes outside the confines of normal mean-tone tempered keyboards.[74] On closer examination of these chromatic notes within their harmonic context, such a view might well be modified. In many instances the unusual chromatic notes are used in discords or *durezze*, or as off-beat chromatic passing-notes, so that it is often almost immaterial whether

---

[71]Luigi F. Tagliavini, "Riflessioni sull'arte tastieristica napoletana del cinque- e seicento," in *Musica e cultura a Napoli dal xv al xix secolo* (Florence, 1983), 141-44. For the passages referred to see Michelangelo Rossi, *Toccate e Correnti* (Rome, 1657), 12 and 23.

[72]Modern transcription ed. Barton Hudson in *Corpus of Early Keyboard Music* 3 (Rome, 1964).

[73]Modern transcription ed. Barton Hudson in *Corpus of Early Keyboard Music* 7 (Rome, 1965).

[74]Tagliavini, "Riflessioni," 144.

they be in tune or not. In some instances it seems as if the effect of an out-of-tune note may have been intended.

In the case of Salvatore, there are three occasions when a d# needs to be in tune in pieces clearly desginated for organ.[75] Perhaps there were enough organs with split keys (e^{b}/d#) to warrant this, perhaps Salvatore expected anyone playing an instrument without d# to play d natural, just as Trabaci and Praetorius gave directions to play a minor third. Where d# and a# occur in *Toccata Prima* and *Toccata Seconda*, they are more effective if sounding e^{b} and b^{b} respectively since they increase the *durezze*. The same is true of the a^{b} in *Ricercar IV* where it is an unaccented passing-note, and possibly in *Ricercar VI* on the *durezza* (though it would be better for it to sound in tune as the discord resolves). The incidence of a^{b} (and g#) in *Toccata Prima* again suggests Salvatore had split keys in mind.[76] The a# in the eighth verse of the "Gloria" in the *Messa dell'Apostoli* occurs on a discord so that a sounding b^{b} is in order. The other instances are in the two canzonas that are written perhaps primarily for viols. (They each have, under the title, the direction: "Questa Canzone può sonarsi con il concerto di Viole.") It should be noted that the other canzonas do not contain unusual chromatic notes. If played on the harpsichord, the relevant notes, which do need to be well in tune, can be retuned. These are, in Canzone II, d#", d#', and a#'. (The corresponding flats are not required.) In *Canzone III*, A^{b} and a^{b} can be similarly tuned; since g#' is required however, a^{b} will necessarily sound out of tune—again, as an off-beat chromatic passing-note this would appear to be acceptable. (Salvatore's approach recalls that of Mayone in the *Toccata Quarta* discussed above.) It is fairly clear, therefore, that Salvatore's music was generally conceived for ordinary harpsichords in mean-tone temperament, the exception never calling for more than two split keys per octave. For the harpsichordist, a split key for g#/a^{b} would be useful in *Toccata Prima* (printed version). A *cimbalo cromatico*, though not indispensable, would have its uses for the canzonas, as it would avoid the need to retune. Finally, the unusually early occurrence of augmented sixths in *Canzone III* should be noted. These benefit enormously from mean-tone tuning which makes the sixth into a nearly perfect interval of a seventh—in

[75]Cf. *Ricercar VIII, Messa della Domenica* (*Kyrie, Verso Quarto*) and *Messa dell'Apostoli* (*Gloria, Verso Ottavo*).

[76]It is perhaps worth recording that (earlier?) MS versions of both toccatas, reproduced in the Appendix to *Corpus of Early Keyboard Music* 3, contain neither a# nor a^{b}, although a d# occurs in the MS version of *Toccata Prima* that is absent in the printed source, while the d# in the printed *Toccata Seconda* is not found in the MS version.

addition to the perfect, or nearly perfect, third. (A similar instance of this chord is found at the end of bar 43 of the *Toccata Terza* mentioned above in n. 63.)

Storace's book is very different. Suffice it to say that, in spite of the enormous variety of keys—and therefore chromatic notes—encountered in this volume, there is hardly one instance where, on the harpsichord, the problem cannot be resolved by retuning. It may be significant that this music was published in Venice, where Cima's retuning instructions had appeared, albeit more than half a century earlier. As an example of Storace's approach, it is worth examining the *Passagagli* (no. 12 in *Corpus of Early Keyboard Music*), which has B^{b} (but not A#), a#, and a#' (but neither b^{b} nor b^{b}'), f (but not e#) and e#" (but not f"). Again, one is reminded of Mayone's *Toccata Quarta per il cimbalo cromatico*. The one exception to this approach in Storace—and this is the only exception in the whole book!—is the occurrence in this piece of both e#' and f'. Since, however, the e#' is part of a discord and the f' a brief unaccented passing-note, any compromise in the tuning will pass unnoticed. Analogous to the position as regards Salvatore, one piece that is likely to have been conceived for organ, the *Recercar di legature*, requires d#s which should be in tune and an a#—on a *durezza*—which need not be.

The third Neapolitan publication is Gregorio Strozzi's *Capricci da Sonare Cembali et Organi*, Naples, 1687.[77] In spite of its late date, much of the music was probably written nearer the middle of the century. Following the same pattern, several pieces have both e^{b} and d# at the same pitch, similarly both a^{b} and g#. In most cases the discordant context of the less usual chromatic note suggests a possible out-of-tune solution, as does the single instance of a g^{b}, which is used as a chromatic passing-note (no. 15, bar 370) in a piece that also calls for f#. Only in *Toccata II, Toccata III*, and *Toccata IV* is it necessary to have both g#s and a^{b}s in tune. The last of these is certainly for organ, and split keys were presumably envisaged. It also uses d^{b}" as a chromatic passing-note; c#" would be acceptable in the context. The strange unprepared B major chord in the *Romanesca* may be the result of a misprint (d#' for d').[78] The title of no. 28, *Euphonia*, would seem to carry the same meaning as "enharmonic" in its original sense and as understood by Vicentino,

[77]Modern edition by Barton Hudson, *Corpus of Early Keyboard Music*, 11 (Rome, 1967).

[78]Hudson, *Strozzi, Corpus,* vol. 11, p. 87, bar 100; also quoted in Apel, *History of Keyboard Music*, 688.

Zarlino, and others—in other words, the intervals should be well in tune. Here, Strozzi follows the Mayone *Toccata Quarta* approach and writes d#, d#', and e^{b}'', while avoinding e^{b}, e^{b}', and d#''.

Rome and the North (Fontana, Cazzati, Pasquini)

Returning to Rome and places North, Fabrizio Fontana's set of ricercars are rather old-fashioned for their date.[79] Only in the final piece, which, like the eleventh one, has a chromatic subject, does the composer stray outside the twelve-note mean-tone system and venture to use d# and d#'.

A slightly earlier publication that should perhaps be taken into account is a set of dances by Cazzati.[80] Its title page leaves open the option of performance on the keyboard—in fact the *spinetta* heads the list of possible instruments. Laura Alvini has pointed out that this music is akin to that published by Pesenti and the figured bass pieces in Strozzi's *Capricci* of 1687[81]; d#s are found in the fifth pair of dances, a^{b}s in the eighth pair. In the twelfth *balletto* there is a cadence at which a# is implied (and indeed included in the optional second violin part), but not made explicit in the figuring. This may well suggest Cazzati's reluctance to stray outside the fourteen-note range offered by instruments with two split keys per octave (a^{b}-d#). In the absence of split keys, these notes can always be made available by retuning on the harpsichord (or *spinetta*).

Such music is a reminder that the harpsichord's main role was that of accompanying. The development, during the latter part of the century, of violin music in particular led to compositions of greater length that showed an increased tendency to modulate, especially to the sharp side.[82]

---

[79]F. Fontana, *Ricercari* (Rome, 1677), edited by Gerhard Doderer (Milan, 1975).

[80]Maurizio Cazzati, *Correnti e Balletti per Sonare nella Spinetta Leuto & Tiorba, Ouero Violino, e Violone col Secondo Violino à Beneplacito* (Bologna, 1662).

[81]See the introduction to the 1979 Florence facsimile reprint.

[82]See, for instance, Biagio Marini, *Affetti Musicali* (Venice, 1617), who included a^{b} and d# in the continuo part, and also B. Marini, *String Sonatas from Opus 1 and Opus 8*, ed., T.D. Dunn (Madison, 1981), 11 and 17 and M. Cazzati, *Il Secondo Libro delle Sonate a una, doi, tre e quattro* (Venice, 1648), which includes the same notes as well as a B# (!)—possibly a mistake for a sharpened 3 or 6—in the continuo part. In G. B. Vitali's *Artificii Musicali* (Modena, 1689) there is a *Passagallo per Violino che principia per B molle e finisce per Diesis*. This piece modulates from B^{b} major to E major, requiring a range of chromatic notes from a^{b} to e#. Modern edition in Luigi Torchi, *L'Arte musicale in Italia*, 7 (Milan, 1907), 159ff.

More and more Italian keyboard music of the period was written in the same idiom as the ensemble music. One must surely assume that the harpsichordist, who, as an accompanist, was used to retuning his instrument to suit the required key did the same when playing solo pieces. That assumption takes for granted that some sort of mean tone temperament was still in use. The prolific output of keyboard music by Bernardo Pasquini would appear to confirm that this was the case; for, while half of his 142 extant works use the traditional twelve-note mean tone scale—including a long ricercar with a chromatic subject—nearly all the rest, even though they require some unusual chromatic notes, remain within a twelve-note range, so that a mean tone system, retained by retuning the relevant notes, seems to be implied.[83] Only six compositions exceed these bounds.[84]

While the principle of mean tone tuning was not completely discarded for a long time to come, there was clearly a tendency amongst Italian keyboard composers before the end of the seventeenth century to consider other temperaments which made the art of modulation available to players of ordinary keyboards. The first publication to demonstrate this was G.C. Arresti's anthology of pieces by various Bolognese organists.[85] One of the compositions contributed by Bartolomeo Monari (no. 10) includes C# and G# major triads. G.B. Bassani writes both D^{b} major and F# major chords within the same piece (no. 4). If there were enough organs tuned in such a way as to warrant publication of this music, there is likely to have been a growing fashion to use a temperament on the harpsichord that could cope with similar demands.

---

[83]With few exceptions, Bernardo Pasquini's keyboard compositions were not published during his lifetime. They have been collected and published, ed. Maurice B. Haynes in *Corpus of Early Keyboard Music*, 5 (Rome, 1964-1968). A large number of the pieces are implicitly or explicitly written for harpsichord.

[84]In two cases (nos. 79 and 123 in *Corpus of Early Keyboard Music*) both a^{b} and g# occur in the same piece, in two cases (nos. 122 and 126) both f and e#, though not in the same movement, in one case (no. 134) b^{b} and a#—also in different movements, and in only one case (no. 131) d# and e^{b}.

[85]G. C. Arresti (ed.), *Sonate da Organo di Varii Autori*, Bologna n.d. This publication is datable to within three years of the end of the centry, although Nona Pyron has suggested that the collection was compiled during the 1680s (cf. "Arresti, G.C." in *New Grove*). I am grateful to Oscar Mischiati for pointing out that split keys were removed from the organs in S. Petronio, Bologna in 1690 at the latest.

The following listings (Appendix A), while not exhaustive, may reasonably be claimed to give a fair representation. It will be observed that, as the century progressed, unsual chromatic notes, especially d# and $a^{\flat}$, became more common in keyboard compositions. There was not, on the other hand, a correspondingly large increase in the incidence of both d# and $e^{\flat}$, or both $a^{\flat}$ and g#, within the same piece. This coincides with the fact that progressively more music seems to have been written for harpsichord, less for organ. This suggests that split keys were probably less commonly incorporated into harpsichords than organs. Although using new tonalities, notably at the sharp end of the spectrum, composers rather surprisingly tended to confine themselves to the twelve-note range of the mean-tone system, albeit often transposed from its traditional place on the keyboard. The recurrence of the "special case" approach, first noted in Mayone's *Toccata Quarta per il Cimbalo Cromatico*, in two pieces by Salvatore, as well as major works by Storace and Strozzi, is particularly striking, as is the apparently deliberate use by the Neapolitan composers of the "wrong" chromatic note in order to create a special kind of *durezze*. The musical evidence, therefore, suggests a reluctance to relinquish the mean-tone system, at least by keyboard composers, who were admittedly no longer the center of attention by the late *Seicento*. The extant keyboard music also suggests that there were relatively few harpsichords with split keys, let alone *cimbali cromatici*.

The case of Frescobaldi's *Cento Partite sopra Passachagli* remains obscure. No Italian keyboard composition seems to have required both c# and $d^{\flat}$ after Frescobaldi until G.B. Bassani's Sonata in Arresti's anthology of the end of the century, the latter piece obviously conceived for a temperament that allowed the same sounding note to play a dual role. It has been pointed out that Froberger's compositions were probably written for some kind of well-tempered system. It may even be significant that Frescobaldi's *Cento Partite* was published in the same year that Froberger arrived in Rome (1637). Frederick Hammond quotes Doni's criticism of Frescobaldi's apparent acceptance of equal semitones, but also states, without giving a source, that Frescobaldi was reputed to be the only player in Rome capable of performing on the archicembalo.[86] One can only assume that Frescobaldi would have used split keys—or indeed a *cimbalo cromatico* or *archicembalo*—when they were available and fiddled with the tuning in their absence.

---

[86]Hammond, *Frescobaldi*, 85-86 and 106-107. Also see Mark Lindley, "Temperaments," §4, *New Grove*.

Apart from the few works by Mayone, Trabaci, and del Buono, pieces such as Frescobaldi's *Cento Partite sopra Passachagli* and many of Froberger's works would seem to benefit from the fine tuning that the *cimbalo cromatico* offers. But the sad fact is that the instrument was obviously perceived to be little more than an ordinary harpsichord with the luxury of some additional keys that represented a convenience for the accompanist or soloist when playing in unusual keys. In post-Frescobaldian Italy the keyboard no longer enjoyed pride of place. The focus of attention, in instrumental terms, was the violin and the string ensemble. As a result, the *cimbalo cromatico* had little chance of playing a key role in the development of the important new idea of modulation. With the possible exception of the Spaniard Francesco de Salinas, there are no reports of great musicians performing on the instrument, as there are of Luzzaschi on the *archicembalo*.[87] As far as posterity is concerned, the *cimbalo cromatico* was a cinderella whose music died away well before midnight.

The aforegoing survey will have made it clear that the *cimbalo cromatico* was a useful but hardly indispensable instrument for the soloist. Much keyboard music of the period—including Mayone's two Toccatas *"per il Cimbalo Cromatico"*—appears to recognize the existence of such instruments but also the lack of their general availability. Clearly instruments with one or two extra keys per octave were much more widespread. This would seem to corroborate the view resulting from the discussion of the documentary evidence for the existence of such instruments. The development of instrumental music during the seventeenth century encouraged the gradual abandonment of mean-tone tuning so that keyboard instruments could play together with fretted strings and, later, modulate through different keys without having countless extra pipes or strings and a more complex mechanism. The continued use of split keys for organs used almost exclusively to accompany vocal music or as solo instruments is understandable.

[87]It is not certain how many divisions to the octave Salinas's harpsichord had. Robert Stevenson takes it to be a *cimbalo cromatico* (cf. "Salinas," *New Grove*, which also quotes Vicente Espinel's eye-witness account of Salinas's playing). This question will be discussed in the subsequent article. Salinas's keyboard playing is also the subject of an ode by Luis de León, cf. *The Penguin Book of Spanish Verse* (Harmondsworth, 1960), 155-156 for text and translation.

APPENDIX A

The situation up to 1640 may be summarized as follows:[88]

	DATE	COMPOSER	PIECE(S)
d# only			
Organ	1543	G. Cavazzoni	Ricercar Primo (?)
	1575	Rocco Rodio	Quarta Ricercar *
	1585	Ottavio Bariolla	Ricercate II,IV,VII *
	1593	A. and G. Gabrieli	Intonationi *
	?	G. Gabrieli	Fantasia IV toni *
	1605	A. Banchieri	Sonate Terza, Quarta, Settima +
	1620	Anon	"Per la Com;"
		(GB-Och 1113)	
	1635	G. Frescobaldi	Fiori Musicali
Unspecified			
Instrument:	1603	A. Mayone	Rogiere
	1608	G. Frescobaldi	Fantasia VII (+V?)
	1621	G. Picchi	Padoana 'la Ongara' *
	1626	G. Cavaccio	Toccata Quarta
	c.1630	T. Merula	Sonata Cromatica
	1637	G. Frescobaldi	Balletti I and II
d# and e^b			
(unspecified			
instrument)	1603	G. Trabaci	Consonaze Stravaganti *
	? (=1615 ens.)	T. Merula	Canzon La Marca
	1637	G. Frescobaldi	Cento Partite +
	1640	Anon.	Intabulations of G. Gabrieli motets +
a^b only			
(unspecified)	1609	A. Mayone	Recercar Ave Maris Stella
	1627	G. Frescobaldi	Toccata I, V, VI
	1627	G. Frescobaldi	Canzona IV *

[88]This table does not include works for *cimbalo cromatico* listed on pp. 6-7 above.

* = use of out-of-tune chromatic note possible (for reason see main text)

+ = piece includes other unusual chromatic notes

	?	T. Merula	Capriccio
a^{b} and g#:			
Organ	1627	G. Frescobaldi	Toccata undecima
	1635	G. Frescobaldi	Recercar con obligo...
Unspecified	1609	A. Mayone	Recercar C. Festa
Instrument	1637	G. Frescobaldi	Cento Partite +
	1640	Anon.	Intabulations of G. Gabrieli motets +
a # only			
organ	1605	A. Banchieri	Sonata Settima +
a# and b^{b}	1610?	Gesualdo?	Canzon franzese
d^{b} and c#	1637	G. Frescobaldi	Cento Partite +
a#, e# and f	1615	G. Trabaci	Gagliarda V^{a}

The situation 1640-c.1690:

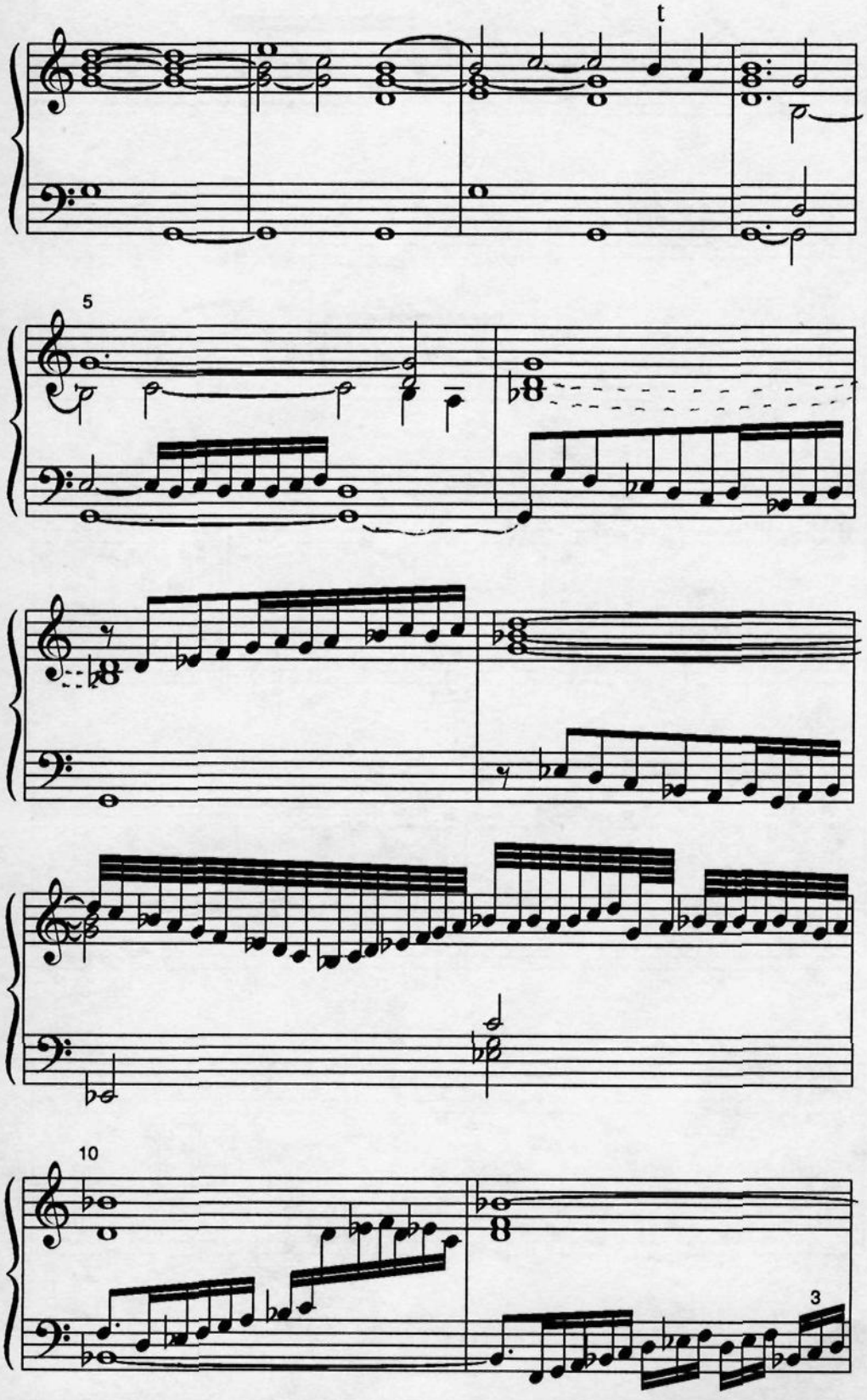
	DATE	COMPOSER	PIECE(S)
d# only			
Organ	1641	Salvatore	Ricercare Ottava ("Iste Confessor")
	1641	Salvatore	Messa d. Apost.,Gloria V° 8° +
	1641	Salvatore	Messa d. Madonna, Gloria V° 7° *
	1641	Salvatore	Messa d. Madonna, Sanctus V° 2° *
	1664	Storace	Recercar di legature +
	?	B. Pasquini	Elevation Toccata *
Unspecified	?	Salvatore	MS Corrente Ia * (p-n)
	1641	Salvatore	Canzon Fr. IIa +
	1641	Salvatore	Toccata IIa * +
	1662	Cazzati	Balleto e Corrente V
	1664	Storace	2 Capricci (i & 3)
	1664	Storace	Romanesca, Spagnoletta, Cinque Passi *
	1664	Storace	Passagagli, Corrente
	1677	F. Fontana	Ricercar XII
	1687	Strozzi	Capriccio I°; Gagliarda IIa
	1687	Strozzi	Corrente Va (fig.)
	1687	Strozzi	Corrente VIIa (? implied, no fig.)
	?	Kerll	Toccatas II, III, V, VIII
	?	*Kerll*	*Toccata IV* +
	?	B. Pasquini	Fantasia (*)
	?	B. Pasquini	2 Variation sets *
	?	B. Pasquini	2 Toccatas *
	?	B. Pasquini	4 Suites
	?	B. Pasquini	Aria; Tastata; Toccata; Sonata (b.c., 2 cembali)
	?	B. Pasquini	18 pieces + (see a#, e#, b#)
d# and e^b			
Organ	1641	Salvatore	Messa d. Domeniche (d#: Kyrie V.i. 3° 4°; e^b Gloria)
Org.e.Cimb.	1687	Strozzi	Toccata Ia *
	1687	Strozzi	Toccata IIa + (*)
Unspecified	1687	Strozzi	Romanesca + (misprint?)
	?	B. Pasquini	Sonata (b.c.)

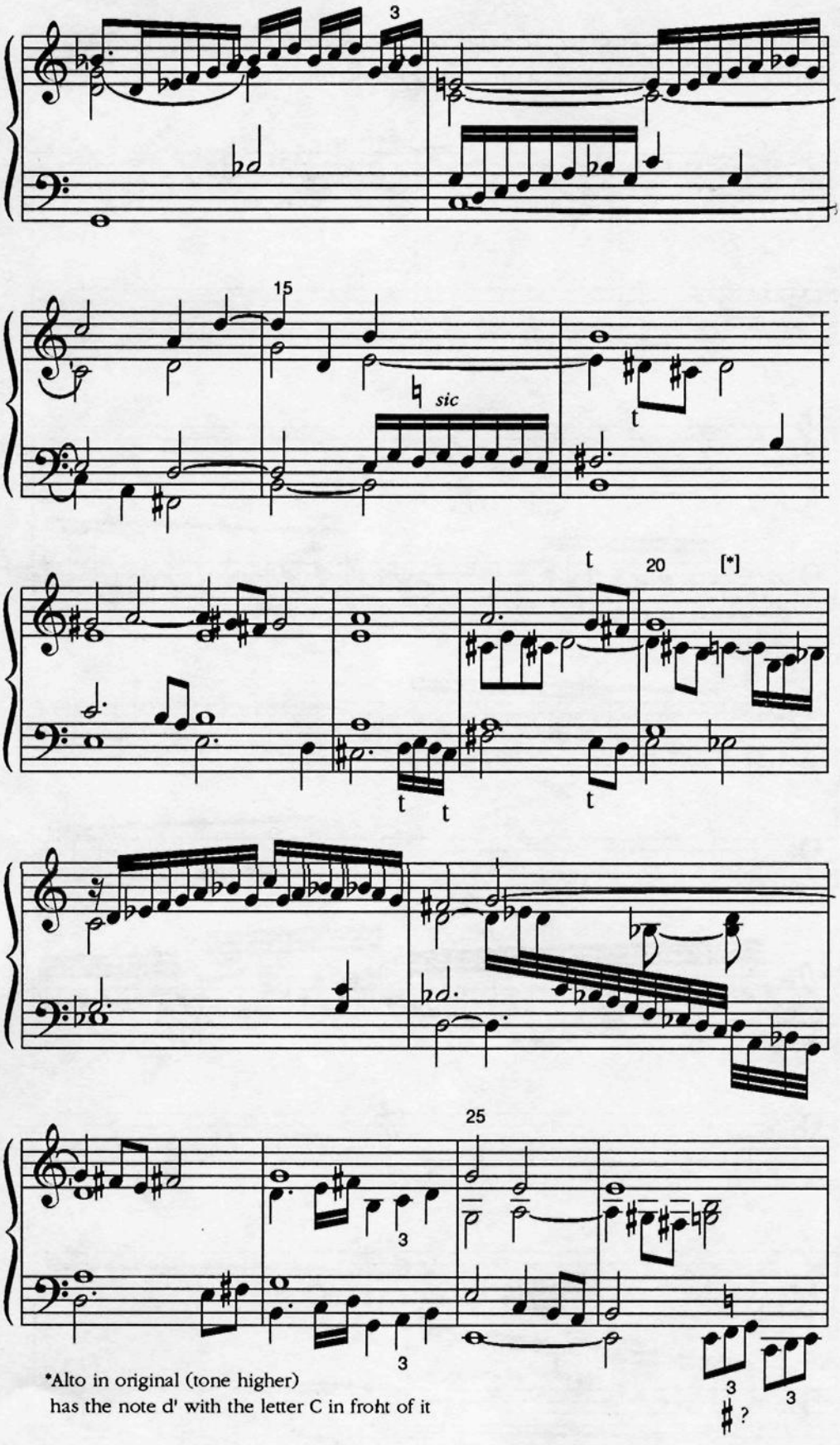
	DATE	COMPOSER	PIECE(S)
"Special Case"	?	Salvatore	MS Toccata (=Tocc Ia) e^{b}, d#', e^{b}" / e^{b}' *
(i.e. different chromatic notes in different octaves)	1687	Strozzi	Euphonia d#, d#', e^{b}"
a^{b} only			
"Org. e Cimb."	1687	Strozzi	Sonata IIIa +
Unspecified	1641	Salvatore	Ricercar Quarto (4° t. trasp.)
			Ricercar Sesto (6° t. finto)
	1662	Cazzati	Balletto e Corrente VIII
	1664	Storace	Passo e Mezzo; Passagagli;
			Balletto; Toccata Ie Canz.
			- modulates I
	1687	Strozzi	Romanesca +
	?	B. Pasquini	Capriccio; Fuga; Aria; Passagagli;
	?	B. Pasquini	8 Suites; 2 Variation sets;
	?	B. Pasquini	2 Tastate; 2 Toccatas
	?	B. Pasquini	5 Sonatas (b.c., 2 cemb.)
	?	B. Pasquini	1 Sonata (b.c.., 2 cemb.) +
	?	B. Pasquini	4 Sonatas (b.c., 1 cemb.)
a^{b} and g#			
Organ	1687	Strozzi	Toccata IV +
Org. e Cimb.	1687	Strozzi	Toccata IIa, IIIa **
unspecified	1641	Salvatore	Toccata Ia +
	?	Salvatore	MS Durezze Ligature
	1664	Storace	Ciaconna * (tr)
	1687	Strozzi	Toccata de Passacagli * (dur)
	?	B. Pasquini	Toccata *
	?	B. Pasquini	Sonata (b.c.?)
"Special case"	1641	Salvatore	Canzone Fr. IIIa Ab, a^{b},
			g#', g#" / a^{b}' *
a# only			
Organ	1641	Salvatore	Messa d. Apost., Gloria v° 8°
Org. e Cimb.	1687	Strozzi	Sonata IIIa* (tr. poss. misprint?)
Unspecified	1641	Salvatore	Canzone Fr. IIa
			Toccata IIa * (dur.)
	1662	Cazzati	Balleto XII (implied in b.c.)

	DATE	COMPOSER	PIECE(S)
	?	B. Pasquini	Suite; Aria; Toccata
	?	B. Pasquini	Toccata * (dur.)
a# and b^{b}	1641	Salvatore	Toccata Ia *
	?	B. Pasquini	Sonata (b.c.)
"Special case"	1664	Storace	see under e#/f
d^{b} only			
Organ	1687	Strozzi	Toccata IV
Unspecified	1687	Strozzi	Gagliarda IIIa
	?	B. Pasquini	Sonata (b.c., 2 cemb.)
d^{b} and c#	Not found		
g^{b}	1664	Storace	Passagagli
	1687	Strozzi	Romanesca * (p-n)
e# only	?	B. Pasquini	Suite; Toccata, Sonata (b.c., 1 cemb.) 5 Sonatas (b.c.,2 Cemb.)
e# and f	?	B. Pasquini	Sonata (b.c.)
"Special case"	1664	Storace	Passagagli B^{b}, a#, a#', f, f', e#" / e#' *
b# only	?	B. Pasquini	Sonata (b.c.)

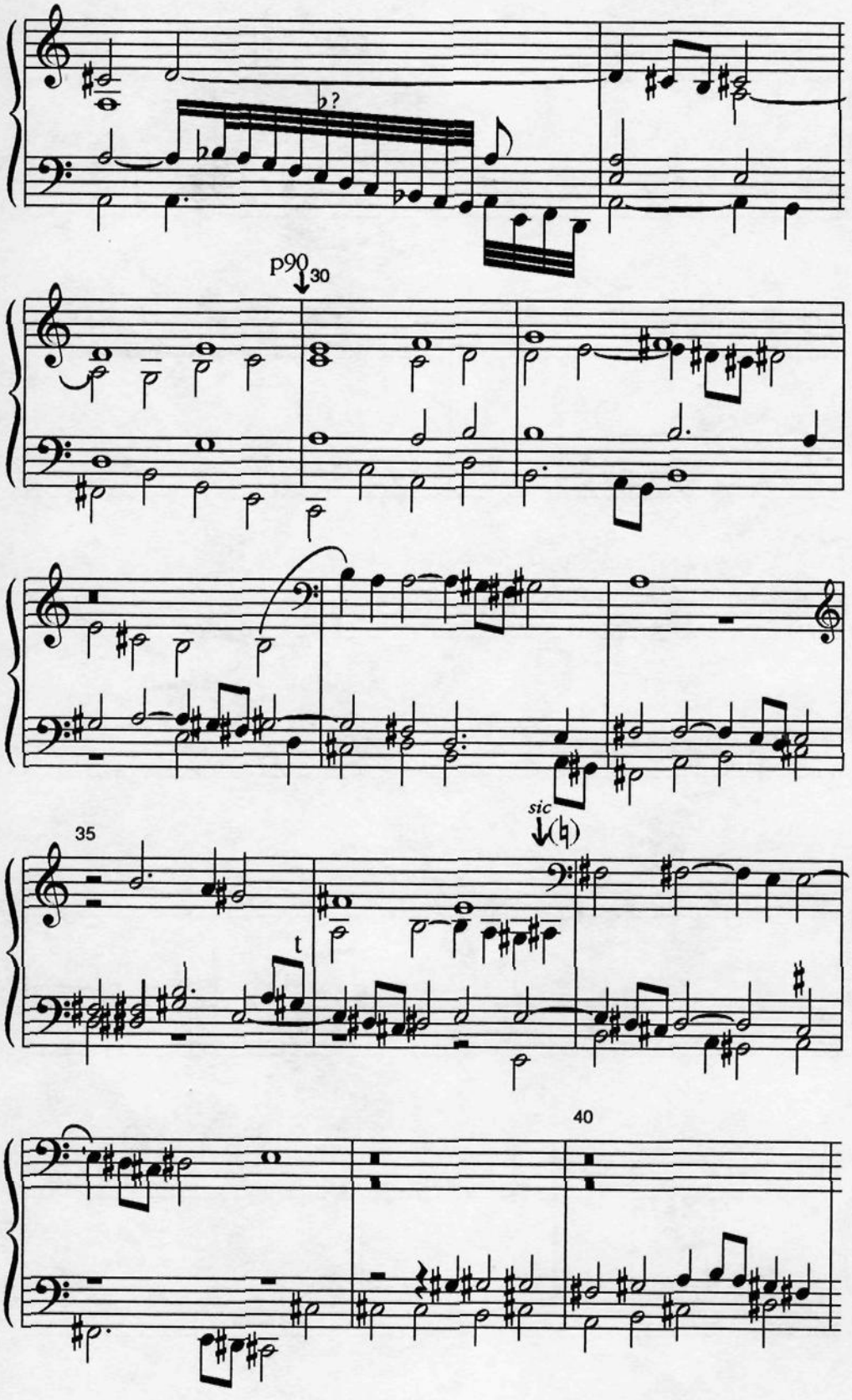
APPENDIX B

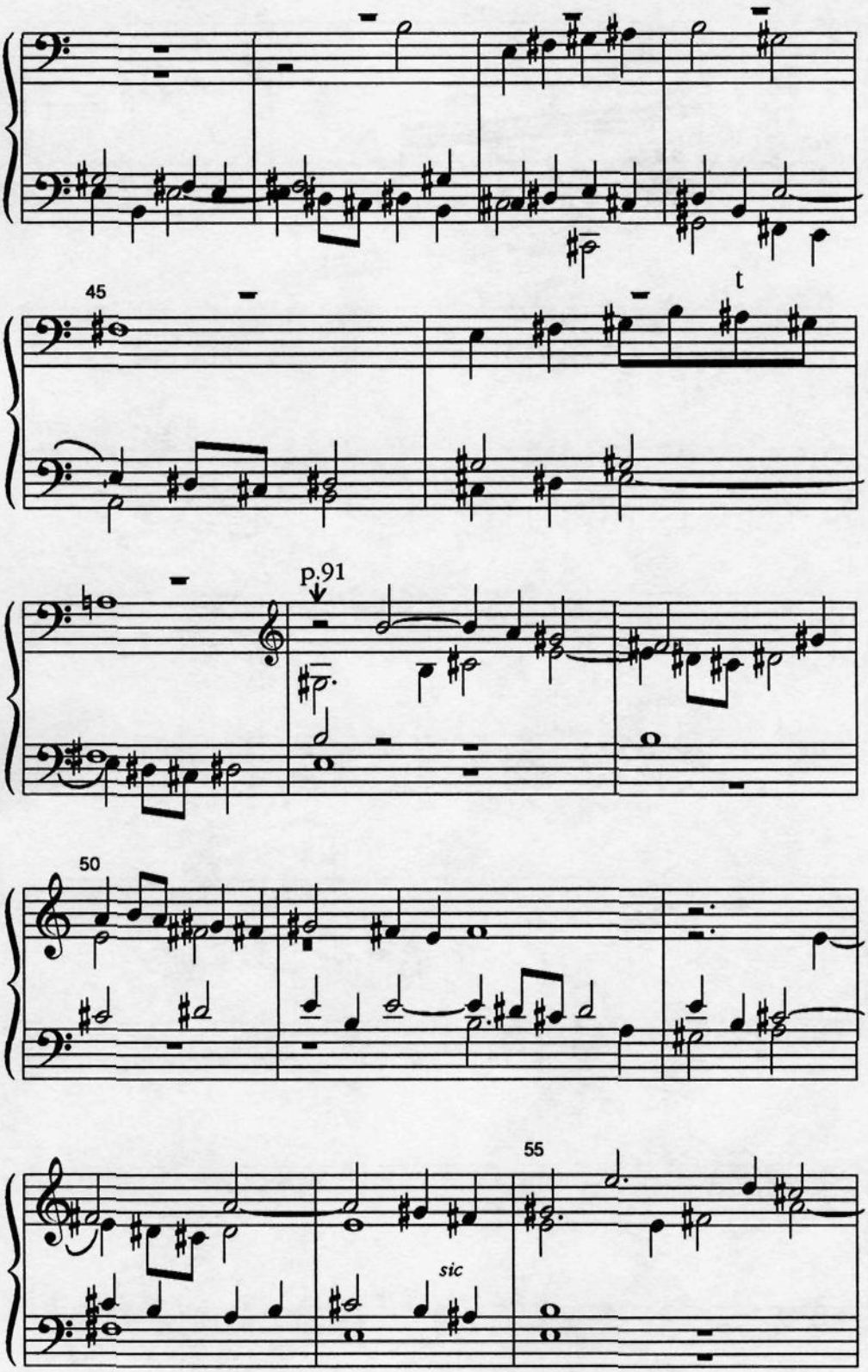
Giovanni Maria Trabaci, *Toccata Terza, & Ricercar sopra il CIMBALO CROMATICO* (transposed down one whole tone)

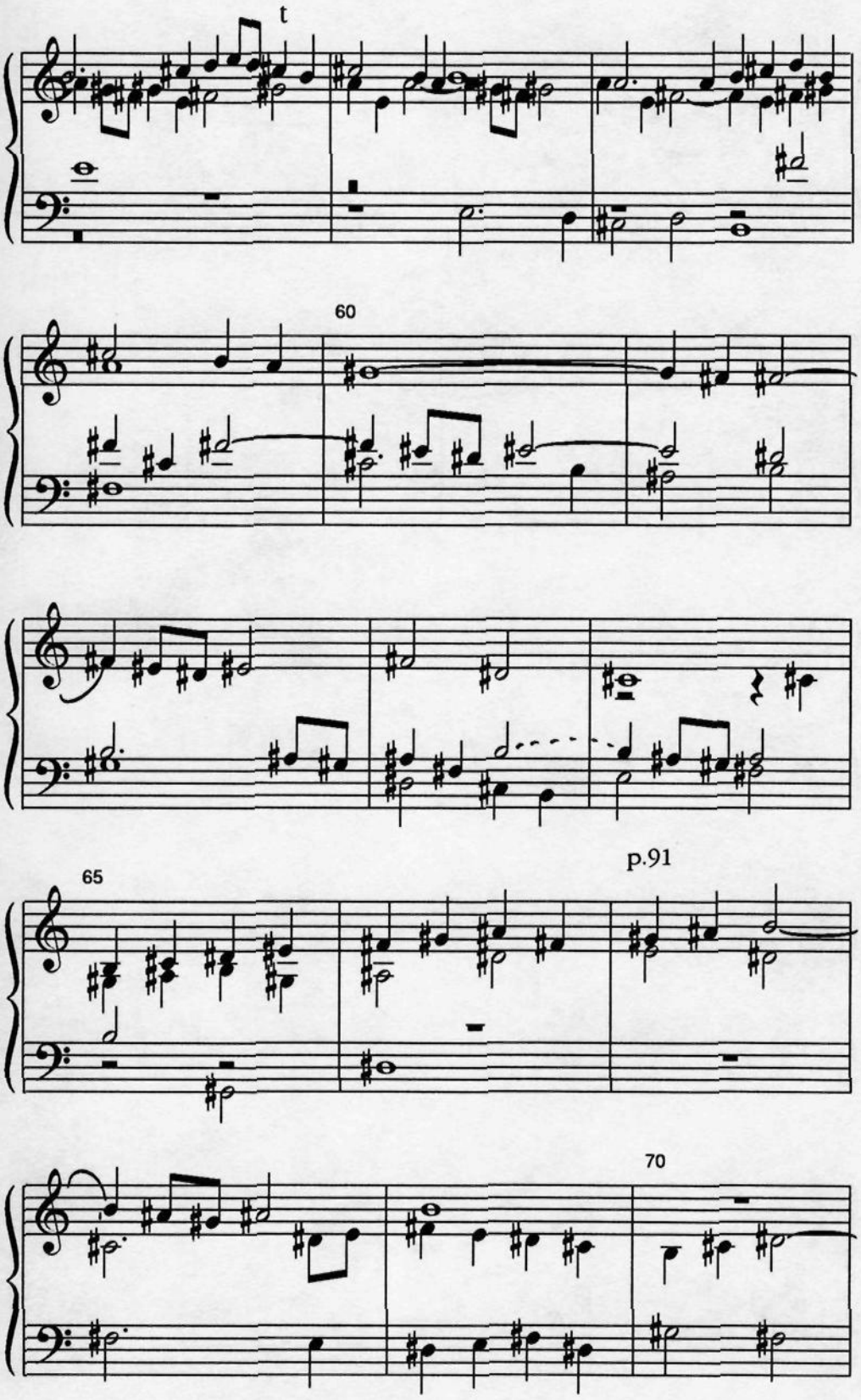


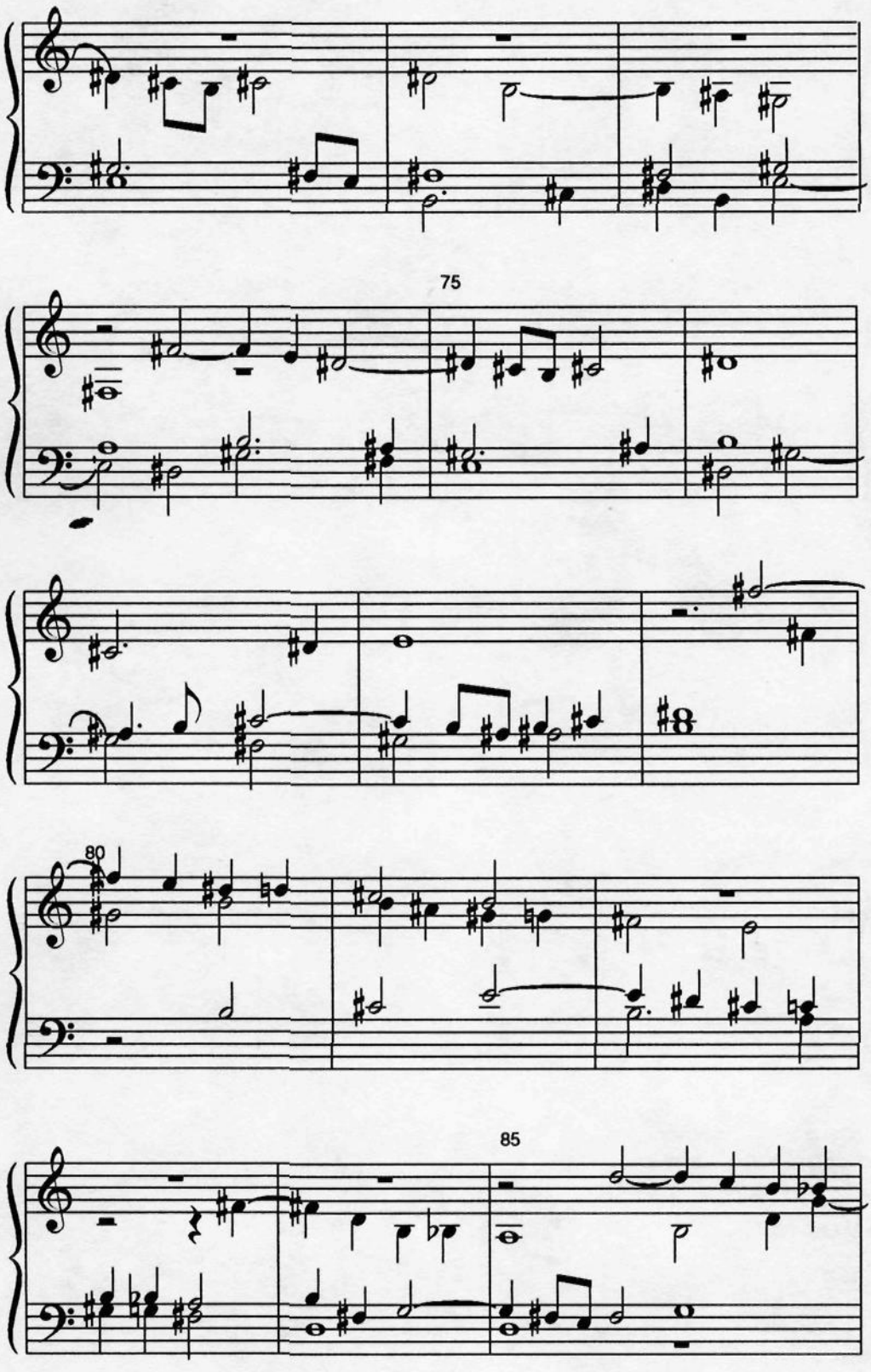


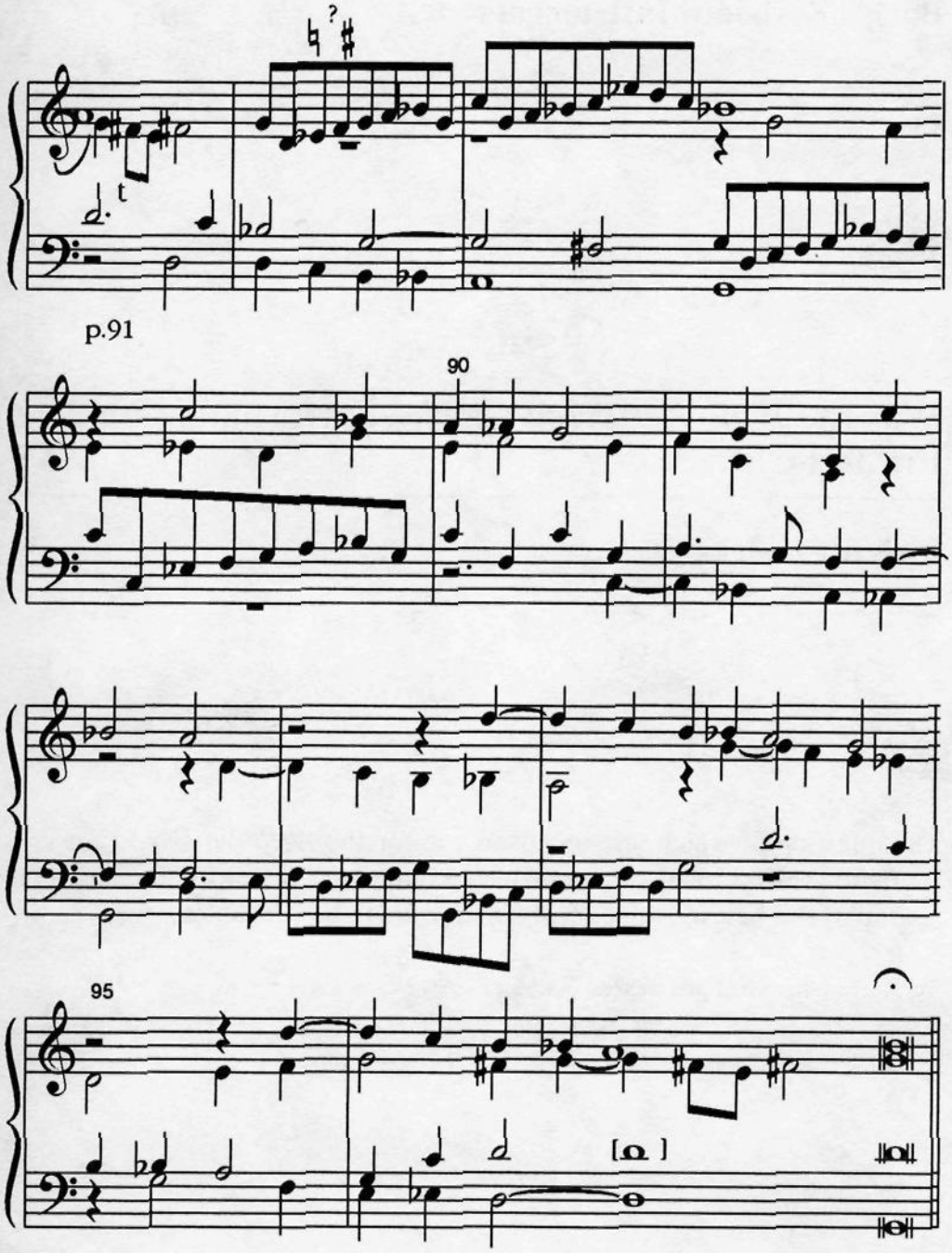
*Alto in original (tone higher)
has the note d' with the letter C in froht of it


b?
p90
30
35
t
sic
40


45
t
p.91
50
55
sic


t
60
65
p.91
70


75
80
85


p.91
90
95